Amendments to the Specification

On page 6, line 31 to page 7, line 22, please replace the paragraph beginning "The term "amino acid substitution" is used herein in relation to" with the following paragraph.

The term "amino acid substitution" is used in relation to the amino acid sequence of a native sequence of the HR1 region of HIV-1 gp41, and is also used in relation to amino acid sequence of a synthetic peptide according to the present invention. The term "amino acid substitution" is used in relation to the native sequence, hereinafter for the purposes of the specification and claims, to mean one or more amino acids substitution in or to the amino sequence of the native sequence in producing a synthetic peptide that can self-assemble in solution into a trimeric form, and wherein the synthetic peptide can bind the HR2 region or a peptide derived ~~thereform~~ therefrom, as may be determined by the teachings herein and by using methods routine in the art. Likewise, when comparing synthetic peptides according to the present invention, reference is often made to the amino acid sequence of one synthetic peptide as containing one or more additional amino acid substitutions when compared to the amino acid sequence of another synthetic peptide. Preferably, an amino acid substitution in the amino acid sequence of the synthetic peptide according to the present invention (e.g., as compared to that of a native sequence) ranges from 1 to 10 amino acids, and more preferably from 1 to 5 amino acids (the higher range being more desirable for longer peptides, e.g., about 40 or more amino acids in length). The amino acid substitution may comprise a "conservative substitution". As known in the art "conservative substitution" is defined by aforementioned function, and includes substitutions of amino acids having substantially the same charge, size, hydrophilicity, and/or aromaticity as the amino acid replaced. Such conservative substitutions are known to those of ordinary skill in the art to include, but are not limited to, glycine-alanine-valine; isoleucine-leucine; tryptophan-tyrosine; aspartic acid-glutamic acid; arginine-lysine; asparagine-glutamine; and serine-threonine. Such substitutions may also comprise one or more of the polymorphisms, as illustrated in FIG. 2, at the various amino acid positions along the HR1 region found in laboratory and/or clinical isolates of HIV-1.

On page 8, line 4 to page 9, line 2, please replace the paragraph beginning "The term "reactive functionality", when used herein for purposes" with the following paragraph:

The term "reactive functionality", when used herein for purposes of the specification and claims, means a chemical group or chemical moiety that is capable of forming a covalent bond and/or is protective (e.g., protects peptide derivatives from reacting with themselves). With respect to chemical groups, a reactive functionality is known to those skilled in the art to comprise a group that includes, but is not limited to, maleimide, thiol, carboxy, phosphoryl, acyl, hydroxyl, acetyl, hydrophobic, amido, dansyl, fluorenylmethyoxycarbonyl (Fmoc), t-butyloxycarbonyl (Boc), sulfo, a succinimide, a thiol-reactive, an amino-reactive, a carboxyl-reactive, and the like. A chemical moiety may comprise a linker. Linkers are known to refer to a compound or ~~moeity~~ moiety that acts as a molecular bridge to operably link two different molecules (e.g., a wherein one portion of the linker binds to a peptide according to the present invention, and wherein another portion of the linker binds to a macromolecular carrier or another antiviral peptide known to inhibit HIV transmission to a target cell). The two different molecules may be linked to the linker in a step-wise manner. There is no particular size or content limitations for the linker so long as it can fulfill its purpose as a molecular bridge. Linkers are known to those skilled in the art to include, but are not limited to, chemical chains, chemical compounds (e.g., reagents), and the like. The linkers may include, but are not limited to, homobifunctional linkers and heterobifunctional linkers. Heterobifunctional linkers, well known to those skilled in the art, contain one end having a first reactive functionality to specifically link a first molecule, and an opposite end having a second reactive functionality to specifically link to a second molecule. It will be evident to those skilled in the art that a variety of bifunctional or polyfunctional reagents, both homo- and hetero-functional (such as those described in the catalog of the Pierce Chemical Co., Rockford, Ill.), may be employed as a linker with respect to the present invention. Depending on such factors as the molecules to be linked, and the conditions in which the linking is performed, the linker may vary in length and composition for optimizing such properties as preservation of biological function stability, resistance to certain chemical and/or temperature parameters, and of sufficient stereo-selectivity or size.

For example, the linker should not significantly interfere with the ability of the synthetic peptide according to the present invention (to which it is linked) to function as an inhibitor of either or both of HIV fusion and HIV transmission to a target cell. A preferred reactive functionality may be used with the present invention to the exclusion of a reactive functionality other than the preferred reactive functionality.

On page 30, last paragraph, please replace the paragraph beginning "It is an unexpected result that an amino acid substitution" with the following paragraph:

It is an unexpected result that an amino acid substitution in the either of the C-terminal "e" position and/or in the C-terminal "f" position of the hydrophobic domain, confers the oligomeric state of synthetic peptide to that comprising predominately a trimer in solution (as can be concluded from the data presented in Table 6). More particularly, amino acid substitutions in amino acid residues neighboring (i.e., at the "g" position in the same or adjacent heptad) the C-terminal "e" and "f" positions of the hydrophobic domain failed to switch the oligomeric state to self-assembly into trimers (see, e.g., peptides having the amino acid sequences of SEQ ID NOs: 44-46; and each of which self-assembles into tetramers in solution). Also as shown in Table 6, an amino acid substitution in the either of the C-terminal "e" position and/or in the C-terminal "f" position of the hydrophobic domain can result in a significant increase in helicity for the synthetic peptide, as well as an increase in antiviral activity (e.g., increase in potency; at least a 3 fold increase in potency) as compared to an HR1 peptide of the native sequence (without ~~substutions~~ substitutions).